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ABSTRACT

This study examined college students' motivational tendencies as predictors of academic outcomes and tested how students' goal orientations and academic delay of gratification mediated these associations. The study used data, previously analyzed in 1999, on academic delay of gratification, personal achievement goal orientations, self-efficacy, test anxiety, demographics, time dedicated to studying, and college grade point average. The results show that students' task goal orientation and academic delay of gratification mediate the relationship between self-efficacy and the time students dedicate to study. These results are considered under the umbrella of Zimmerman's cyclical model of self-regulation, which posits that learners engage in sustaining cognition, behavior, and emotions to pursue academic goals and intentions. The findings are also consistent with Mischel's self-regulatory approach, which assumes that effective delay of gratification is a function of motivation and voluntary postponement of immediate gratification in order to pursue later outcomes. The results demonstrate that students who have high self-efficacy are engaging in academic tasks for the sake of learning and mastering work, delay gratification and persist longer in goal directed study time. Implications for education and future research are discussed. Appended are: sample items from the Academic Volitional Strategy Scales and from the Patterns of Adaptive Learning Survey, Test Anxiety, Self-Efficacy and Reliability Cronbach Alphas. (Contains 39 references, 2 tables, and 2 figures.)(SM)

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Self-regulation of Learning in the 21st Century: Understanding the Role of Academic Delay of Gratification

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Abstract

The present study examined students' motivational tendencies as predictors of academic-related outcomes and tested how students' goal orientations and academic delay of gratification mediated these associations. The results show that students' task goal orientation and academic delay of gratification mediate the relationship between self-efficacy and the time the students dedicate to study. These results are considered under the umbrella of Zimmerman's cyclical model of self-regulation, which posits that learners engage in sustaining cognition, behavior, and emotions to pursue academic goals and intentions. Our findings are also consistent with Mischel's self-regulatory approach, which assumes that effective delay of gratification is a function of motivation and voluntary postponement of immediate gratification in order to pursue later outcomes. Our results demonstrate that students who are high self-efficacious are engage in academic task for the sake of learning and mastering work delay gratification and persist longer in goal directed study time. Implications for education and future research are discussed.

Self-regulation of Learning in the 21st Century: Understanding the Role of Academic Delay of Gratification

The role of self-regulation of learning in enhancing students' academic achievement has been a continual concern for teachers, researchers, and theorists for the last decades (Randi & Corno, 2000; Pintrich, 2000; Pintrich & De Groot, 1990; Schunk, 2000; Winne, 1995; Zimmerman, 2000). The challenge in the 21st century is to understand, in a more heuristic and holistic way, what are the mediating learning-forces that enhance and maintain self-regulation. Toward the end of the last century, researchers, theorists, and educators uncovered that some students exhibit adaptive self-regulatory strategies and motivational patterns, such as delaying gratification, exerting appropriate effort for success, persisting through adversity, enjoying the challenge, using appropriate learning strategies, setting specific goals, and displaying high self-efficacy level (Zimmerman, 1998, Zimmerman & Martinez-Pons, 1986, 1990). In contrast, less skilled students cease trying, lose interest in the activity, are unable to set specific goals and strategies, are low self-efficacious and unwilling to delay gratification. Students exhibiting the latter pattern of behavior rarely excel in education, and most importantly, never reach their academic self-potential because they do not engage cognitively and behaviorally in self-regulation of behavior.

These aforementioned patterns of behavior are clearly observable in the individual differences demonstrated by students who are or are not willing to delay gratification for the sake of future academic rewards (Bembenutty & Karabenick, 1998; Bembenutty, 1999). Learners with high preference for delay of gratification are willing to maintain

academic goals in spite of attractive alternatives in order to achieve long-term academic goals (Bembenutty, 1999; Bembenutty & Karabenick, 1998). Thus, high self-regulated individuals delay gratification by enacting long-term intentions, by foregoing immediate impulse, and by deferring distracting activities (Ayduk, 1999, Ayduk et al, 2001; Bembenutty, 1999; Bembenutty & Karabenick, 1998; Mendoza-Denton, Freitas, & Downey, 1997). However, despite the importance of this phenomenon, it is not clear how delay of gratification (henceforth called academic delay of gratification to emphasis its academic content specificity) mediate the relationship among students' motivational beliefs, affect, and their academic achievement. Self-efficacy and goal orientations are two of the motivational beliefs known to be associated to academic achievement (Bandura, 1997, Middleton & Midgley, 1997; Pintrich & De Groot, 1990; Schunk, 2000; Zimmerman, 2000). Test anxiety is one of the affective and emotional components, which is negatively associated with achievement outcomes (Naveh-Benjamin, McKeachie, & Lin, 1987; Pintrich & Schunk, 1996; Spielberger, 1980; Spielberger & Vagg, 1995; Tobias, 1985, 1992). Thus, a challenge for researchers and educators has been to understand how delay of gratification would mediate these associations.

The purpose of the present study was to extend the work of self-regulation by examining how academic delay of gratification mediates the relationship between self-efficacy beliefs, goal orientations, test anxiety level, and academic achievement among college students enrolled in math courses. The achievement-related outcomes were students' college grade point average and hours per week the students spent studying for the course. This study used the same data analyzed by Bembenutty (1999). This was done because the present study focused on different theoretical questions. Further, the

present study extended Bembenutty's (1999) work by examining variables that were not examined before.

Academic Delay of Gratification

Recently, theorists and researchers, from a social cognitive perspective, have adopted a self-regulation and willpower approach to explain individuals' ability to delay gratification (Ayduk et al., 2001; Mischel, 1996, Mischel, Canton, & Feldman, 1996). Under this umbrella, delay of gratification is conceptualized as an individual's competence, which helps to voluntarily postpone immediate gratification in order to enact rewards temporarily distant (Mischel, Shoda, Rodriquez, 1989). Mischel and his associates (Mischel, 1996, Mischel, Canton, & Feldman, 1996) have developed a paradigm in which children are asked to choose between a less valuable immediately available reward and a larger reward, which is temporarily distant. The researchers found and association between children's willingness to wait for a larger but temporarily distant reward and their intelligent level, ability to resist temptation, social responsibility, and achievement. Years later, in a longitudinal study, the researchers found an association between children's choice to exercise self-control, their use of strategies to avoid temptation, and their academic and social competence level while they were adolescents (Mischel, Shoda, & Rodriguez, 1989; Mischel, 1996). More recently, some of the children were followed-up. The researchers found that almost 30 years later their preschool ability to delay gratification was associated with their adults' ability to cope with stress and frustration (Ayduk, 1999, Ayduk et al., 2001).

According to Mischel (1996), delay of gratification is highly a function of individuals' expectancies for rewards, self-efficacy level, and the subjective value of the rewards. Mischel argued that individuals would choose a reward, which they consider attainable and highly valuable. However, he argued that in order to wait for the delayed rewards, the individuals must feel self-efficacious about their capacity and competence to obtain the later outcomes. Otherwise, without self-efficacy, the individuals would not persist in a goal directed behavior and therefore would not voluntarily postpone immediate gratification. Thus, according to Mischel, a high level of self-efficacy is a pre-condition for future-oriented delay of gratification. In other words, the ability to delay gratification would mediate the relationship between the individuals' self-efficacy level and their goal-directed behavior toward a temporarily distant outcome.

Mischel and his associates (Mischel, 1974; Mischel, Cantor, & Feldman, 1996) distinguish between the "goal choice" phase before engaging on delay of gratification and the "goal control" phases after an intention is established. Goal choice would be determined by the individual's expectancy, values, and self-efficacy level. During the goal control phase, individuals engage cognitively and behaviorally in actions to maintain goals. These two phases are similar to Kuhl's (1985) action control pre-and post-decisional phases, as well as Heckhausen and Gollwitzer's phases of goal-directed behavior. Mischel's two phases are similar also to Zimmerman's cyclical model of self-regulation (this later point will be discussed later).

Mischel's conceptualization of delay of gratification as a mediating factor between motivation and achievement-related outcomes is in direct opposition to the dispositional approach. Theorists with a dispositional approach may argue that the ability

to delay gratification is a trait-like characteristic that would precede self-efficacy. In the present study, however, it is adopted Mischel's conceptualization of delay of gratification and it is argued that delay of gratification in an academic setting would mediate the association between students' self-efficacy level and their academic-related outcomes.

Academic Delay of Gratification and Self-Efficacy

In a set of studies, Bembenutty and Karabenick (1998) found a positive association between college students' willingness to delay of gratification, their self-efficacy beliefs, and their final course grade. To assess academic delay of gratification, Bembenutty and Karabenick (1998) used the 10-item Academic Delay of Gratification Scale (ADOGS). The ADOGS assesses college students' delay of gratification tendencies. Academic delay of gratification is defined as the students' postponement of immediately available opportunities to satisfy impulses in favor of pursuing important and valuable academic rewards, goals, and intentions that are temporarily distant (Bembenutty & Karabenick, 1998). However, based on these findings, it is not possible to determine the mediating role of delay of gratification. That is why, the present study sought to investigate whether delay of gratification mediates the association between the students' level of self-efficacy and achievement-related outcomes.

The mediating role of delay of gratification between students' self-efficacy level and their performance is supported by the social cognitive theory, which maintains that there is an interaction among the person, the environment, and the behavior (Bandura, 1997, Schunk, 2000; Zimmerman, 2000). Specifically, Zimmerman (1998, 2000) proposed that self-regulation is a cyclical process in which learners set goals, monitoring

their progress, and reflect about their performance interactively. Zimmerman's model suggests that learning is maintained through a cycle of self-regulatory processes that must be monitored during task performance. According to Zimmerman (2000), self-regulation involves three-phases. The forethought phases (pre-performance) includes processes that set the stage for action. The forethought phase includes goal setting, strategic planning, self-efficacy beliefs, and intrinsic interest. The performance phase (during performance) includes the processes that affect attention and action. The performance phase includes attention focusing, self-instruction, and self-monitoring. The self-reflection phase (post-performance) includes learners' responses to their efforts. Examples of the self-reflection phase are self-evaluation, attributions, self-reactions, and adaptivity.

Self-efficacy is an important variable that affects all phases of self-regulation (Zimmerman, 2000). As the learners engage in the task, they use self-regulatory strategies and during self-reflection phases they will evaluate their learning progress (Zimmerman, 2000). From the social cognitive theory, academic delay of gratification (performance phase) is hypothesized to be activated by learners as a self-regulatory strategy influenced by their self-efficacy level (forethought phase), and delay of gratification will affect students' performance.

Academic Delay of Gratification and Goal Orientation

In the present study, it is also hypothesized that students' goal orientations mediate the association between their motivational tendencies and their academic performance (Elliot & Church, 1997; López, 1999). Specifically, Elliot and Church (1997) posited that competence expectancies precede achievement goals. Goal

orientations refer to students' beliefs about why they pursue academic tasks (Ames, 1992; Elliot, 1999; Elliot & Church, 1997; Middleton & Midgley, 1997; Pintrich, 2000). In the literature, there are identified three major goal orientations: task-goal orientation, performance-approach goal orientation, and performance-avoid goal orientation. Task-goal orientation refers to students' engagement is academic task because they enjoy, like and want to master the task. Performance-avoid goal orientation refers to students' involvement is academic task for the sake of demonstrating superiority over their peers and their competence. Performance-avoid goal orientation refers to students' engagement on the task for the sake of avoiding failure and avoiding showing incompetence or inability.

When Bembenutty (1999) analyzed the present data, he found that academic delay of gratification was related to students' task goal orientation, but it was not related to performance-approach and performance-avoid goal orientation. Further, using a cluster solutions on goal orientations, he found that students who endorsed primarily a task-goal orientation reported higher preference for delaying gratification than the students who endorsed primarily a performance approach and performance-avoid goal orientation. Further, students who endorsed primarily task and performance-approach goal orientation reported higher tendencies to use learning strategies to enhance and maintain their self-efficacy level. Although these findings are impressive, they said little about how goal orientations mediate the relationship between students' motivation and their academic-related outcomes. Indeed, it is not clear whether the students' goal orientations will directly affect performance or whether the association between goal orientations and performance is mediated by delay of gratification. In Zimmerman's model, goal

orientation is conceptualized as a motivational component during the forethought phase and delay of gratification is hypothesized as a component of the performance and volitional phase. Thus, in the present study, it is hypothesized that students' goal orientations would mediate the association between self-efficacy and delay of gratification and that delay of gratification would mediate the relationship between students' goal orientations and performance.

Delay of Gratification and Test Anxiety

Self-regulation of affect and emotion before and during test taking is important because it could determine academic success or failure (Schutz & Davis, 2000; Benjamin, McKeachie, & Lin, 1987; Tobias, 1985). Exam performance highly depends on whether students continue to study, even when anxiety has arisen and attractive alternatives demand attention. Long-term academic achievement would depend on the students' ability to control the detrimental effect of test anxiety. Previous work by Bembenutty and Karabenick (1998) and by Bembenutty, Karabenick, McKeachie, and Lin (1998) showed that there was not a significant association between delay of gratification and test anxiety. That is why in the present study, a relation between test anxiety and delay of gratification is not predicted. However, it was predicted an association between test anxiety and students' goal orientations, and that goal orientations in turn should mediate the association between test anxiety and academic performance. Indeed, Middleton and Midgley (1997) reported a positive association between test anxiety and students' performance-approach and performance-avoid goal orientation. However, the

researchers found that there was not significant correlation between task-goal orientation and test anxiety.

Hypotheses

In Figure 1 it is display a pictorial representation of the path model, which serves to illustrate the associations between students' motivation and affective component and their achievement-related outcomes. Plus signs represent positive associations and minus signs represent negative associations. In the model it is illustrated the hypothesized that academic delay of gratification mediates the relationship between students' self-efficacy level and the amount of time they spent studying and their grade point average. However, in the model it is also illustrated that students' goal orientations mediate the association between self-efficacy and delay of gratification. In the model it is hypothesized that test anxiety influence academic performance through its positive association with performance-approach and performance-avoid goal orientation, but not through task goal orientation or delay of gratification. Students' task-goal orientation, performance-approach goal orientation, and academic delay of gratification are predicted to directly and positively influence the amount of time the students spent studying, but not there college grade point average. Students' performance avoid goal orientation is predicted to directly and negatively influence students' time of studying. It is predicted that the amount of time dedicated to study is the only variable that is directly and positively associated with the students' grade point average.

Method

Participants

Participants were college students (N = 102; 62 females and 40 males) enrolled in undergraduate math courses at a large, public, Midwestern university. Twenty of the participants were graduate students. Sixty-seven of the participants were Caucasians and 30 were members of different minority groups. Five students did not report their ethnicity. As it was discussed previously, the present data was partially analyzed by Bembenutty (1999). However, in the present study only five of the Bembenutty's variables were used. In addition, those five variables were examined a significant different way.

Measures

Academic Delay of Gratification. In this study, three scenarios from a short version of the Academic Delay of Gratification Scale (ADOGS; Bembenutty, 1997; Bembenutty & Karabenick, 1998), were used. The has an internal consistency Cronbach $\alpha = .72$ ($M = 2.93$, $SD = .71$). The ADOG examines students' delay of gratification preference in relation to the math course in which they were currently enrolled. The students rated their preference for an immediately available attractive option versus a delayed alternative. An example (see Appendix) is, A, "Delay studying for an exam in this class the next day even though it may mean getting a lower grade, in order to attend a concert, play, or sporting event," versus, B, "Stay home to study to increase your chances of getting a high grade on the exam." Students responded on a four-point scale: Definitely choose A, Probably choose A, Probably choose B, and Definitely choose B. Considered as continuous

variables, responses were coded and added for the three items so that higher total scores indicated greater delay of gratification (range 1 to 4).

Personal Achievement Goal Orientations. Students' task, performance-approach, and performance-avoidance goal orientations were measured with an adapted version of the Patterns of Adaptive Learning Survey (PALS; Midgley et al. 1997; see Appendix B). The PALS contains three subscales that examine students' goal orientations in their classroom. First, the Task Goal Orientation scale, Cronbach α =.87, 5-items (M = 5.16, SD = 1.34) measures students' task engagement for the sake of developing competence and mastery (e. g., "I do my schoolwork in math because I am interested in it'). Second, the Performance -Approach Goal Orientation scale, Cronbach α = .85, 6-items, (M = 3.97, SD = 1.52) measures students' engagement in the tasks to demonstrate competence and skills (e.g., "I want to do better than other students in this class"). Third, the Performance-Avoidance Goal Orientation scale, Cronbach α = .81, 6-items (M = 2.64, SD = .1.26) refers to students' intention to avoid demonstration of lack of skills (e.g., "The reason I do my work is so others won't think I'm dumb"). The PALS is a scale with a response format consisting of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me").

Self-efficacy. In this study, students' self-efficacy level was assessed with the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1993). The scale has a Cronbach α = .84, 7-items (M = 5.65, SD = 1.12). An example is: "I can do well in this math class if I want to."

Test anxiety. Test anxiety was assessed with the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1993). The

scale has a Cronbach α = .70, 4-items (M = 3.35, SD = 1.44). An item if the scale is: " When I take tests in this class, I think a lot about how poorly I am doing."

Demographic information. Demographic information, which included gender and ethnicity, were obtained.

Time dedicated to study. Students reported how many hours they spent studying for the math course by answering the following question: "How many hours per week do you usually spent studying for this course? The mean hours per week was 6.16 (SD = 5.21).

College grade point average. The students also reported their college grade point average (GPA). The mean was 2.93 (SD = .71) in a scale from 0 to 4.

Results

First, a multivariate analysis of variance (MANOVA) was conducted to examine mean level differences in gender (male = 0, female = 1) and ethnicity (minority = 0, Caucasian = 1) on the dependent variables (i.e., academic delay of gratification, test anxiety, goal orientations, GPA, and hours of studying). Table 1 displays the means, standard deviations, and alpha level of all the dependent variables. Analyses revealed a non-significant multivariate interaction between gender and ethnicity for the dependent variables, F (1, 76) = 1.59, $p > .05$. Analyses revealed a non-significant multivariate main effect for participants' gender , F (1, 78) = 1.30, $p > .05$, or ethnicity , F (1, 78) = 1.97, $p > .05$.

Correlations Among the Dependent Variables

Next, the relationships between all the variables used in this study were considered. As Tables 2 shows, academic delay of gratification was positively correlated to students' hours of studying ($r = .43$, $p < .01$) and task-goal orientation ($r = .50$, $p < .01$). However, academic delay of gratification was marginally related to self-efficacy ($r = .19$, $p < .10$) and students' college grade point average ($r = .17$, $p < .10$).

Self-efficacy a positively correlated to task-goal orientation ($r = .61$, $p < .01$), but is was negative associated with test-anxiety ($r = -.43$, $p < .01$) and to performance-approach goal orientation ($r = -.39$, $p < .01$). Test anxiety was positively correlated to performance-approach goal orientation ($r = .45$, $p < .01$) and to performance-avoid goal orientation ($r = .48$, $p < .01$), but it was negative correlated to task-goal orientation ($r = .34$, $p < .01$) and self-efficacy.

Task goal orientation was significantly related to academic delay of gratification, students' amount of time dedicated to study ($r = .29$, $p < .01$), and self-efficacy ($r = .61$, $p < .01$), but it was negatively associated to performance-avoid goal orientation ($r = -.34$, $p < .01$). Performance-approach goal orientation was positively related to test anxiety and performance-avoid goal orientation ($r = .60$, $p < .01$). Performance-avoid goal orientation was positively related to test anxiety and performance-approach goal orientation. Students' college grade point average was not positively related to any of the other dependent variables. Students' hours of studying for the class was positively related to academic delay of gratification.

Mediational Analyses

In the next step, a path analysis of conducted to examine the direct effect of the variables in the model and to examine the mediating role of academic delay of gratification and task goal orientation. In contrast to correlational analyses, which only show the association between variables, path analyses are useful to reveal the causal order among variables when there is a theoretical and empirical evidence to support the paths. To test the hypotheses of this study, we used LISREL-8 (Jöreskog & Sörbom, 1993) and assessed the model fit with a χ^2 maximum likelihood. A non-significant χ^2 would indicate a fit of the model, which will indicate that the expected and obtained models are not significantly different. Figure 1 displays pictorial representation of our hypothesized model. Figure 2 displays the final path model, which shows only the significant paths with the exception of the path between self-efficacy and delay of gratification.

Using self-efficacy and test anxiety as two exogenous variables, we hypothesized that their relationship with academic-related outcomes would be mediated by the endogenous variables of goal orientation and delay of gratification. We then hypothesized that the later endogenous variables would influence the amount of time the students spent studying. Time of studying was predicted the only variable that directly influence students' grade point average.

The results of the path analysis indicate that some of the hypothesized path did not fit well the model, providing only partial support for it. Self-efficacy was negatively and not significantly related to academic delay of gratification ($\beta = -.18$, $p > .05$). We decided to maintain this path because eliminating it would not significantly improve the

model and because it provides a somewhat unusual result. To explore this finding, a series a regression analyses were conducted with delay of gratification as the dependent variable. The independent variables were all the other variables in the study. We entered them in steps and by adding or eliminating them from the equations one by one. The results indicate that task-goal orientation acted as a suppressor of self-efficacy. Indeed, there is evidence of multicollinearity (Tolerance = 46) among the two variables. However, self-efficacy was a positive and significant predictor of task-goal orientation (β = .61, $p < .05$). Task goal orientation was a positive and significant predictor of delay of gratification (β = .61, $p < .05$). Academic delay of gratification was a positive and significant predictor of hours of studying (β = .43, $p < .05$).

Testing task-goal orientation and delay of gratification as mediators in the model reveals that indeed the association between self-efficacy and delay of gratification is mediated by task-goal orientation. Similarly, although delay of gratification has a direct effect on students' time dedicated to study, it also mediates the effect of task-goal orientation on students' hours of studying. The model accounted for a significant amount of variance in academic delay of gratification (R^2 = .27), students' amount of hours dedicated to study (R^2 = .18), and students' task goal orientation (R^2 = .37). Thus, the final model fits well the data. The χ^2 (2, N = 102) = 3.12, $p > .05$ (Non-Normed Fit Index (NNFI) = .96, Incremental Fit Index (IFI) = .99, Goodness of Fit Index (GFI) = .98, Comparative Fit Index (CFI) = .99).

Discussion

Adopting a social cognitive approach (Bandura, 1997; Zimmerman, 2000), the present study served to examine the mediating role of academic delay of gratification and task-goal orientation between students' self-efficacy beliefs, task anxiety level, and their academic-related outcomes. We focused on self-efficacy beliefs as a positive motivational tendency that facilitates self-regulation of learning. We also considered test anxiety as a negative affective component that interfere with students' academic progress. We found that indeed goal orientation and delay of gratification mediate the relationship between students' self-efficacy beliefs and their academic outcomes.

We framed these analyses under the umbrella of Zimmerman's cyclical model of self-regulation. Zimmerman's (2000) model fit our theoretical approach and supports our findings. From the self-regulation view, learners engage in sustaining cognition, behavior, and emotions to pursue academic goals and intentions (Schunk, 1994; Zimmerman 1998, 2000). As our results demonstrate, students who are high self-efficacious are those who engage in academic task for the sake of learning and mastering class-work. These students are motivationally active participants in their own learning process (Zimmerman, 1986). That is why in this study, we found a positive effect of self-efficacy on students' task-goal orientation. In addition of these students been motivationally active, our results shows that they are behaviorally active by using learning strategies, such as academic delay of gratification to put effort to ensure long-term goal attainment. In our study, this notion is found in the mediating role of delay of gratification.

The mediating role of delay of gratification places it right there in the performance and volitional phase of Zimmerman's cyclical model, mediating between the forethought phase (before task) and the self-reflective phase (after task). In this view, once the students had selected their goals and strategic planned their task influenced by their self-efficacy beliefs and task-goal orientation, they engage in attention selection, self-instruction, and self-monitoring to secure the expected outcomes. It is here when delay of gratification is important because it help students orchestrating the process of learning by maintaining effort over time in the face of distraction and obstacles. Delay of gratification serves the purpose of protecting task specific intentions from non-task competing alternatives. It is by delaying gratification of immediate distracting task that the students becomes artifice of their own learning, securing in that way later valuable and desirable outcomes.

An advantage of framing the present findings under the umbrella of Zimmerman's social cognitive model is that it explains well how delay of gratification is acquired and maintained by learners. Like Bandura (1997), Zimmerman (2000) proposes that behavior is primarily acquired and maintained by observation and emulation of social models. In an academic context, social models are teachers, parents, and peers who could help to modeling the necessary steps to self-regulation and maintenance of intentions in the light of distracting alternatives. For example, if learners observe teachers planning their activities, relating to students their personal experience of successful delay of gratification, and how they avoid distractions, then learners will emulate those behaviors as their own until the behaviors become part of the students psychological equipment.

Our results are consistent with Zimmerman's notion that the students' goal orientation precede performance (Zimmerman, 1998). Self-regulated learners are more self-efficacious, but they also are task-goal oriented. The present findings suggest that task-oriented learners would be those who would control their environment in order to secure mastering and task completion. For example, these students would be those who will disconnect the telephone line in order to avoid distracting telephone calls, will turn-off the television set in order to avoid watching their favorite show, or would not turn-on the computer to avoid spending too much time on the internet.

The present results also support Mischel's notion that delay of gratification is highly a function of individuals' level of motivations such as self-efficacy. In this view, highly self-efficacious learners would be those who by voluntary postponing immediate gratification, they engage in an effective self-regulation that would result in achieving higher academic performance. Further, students; with a high willingness to delay of gratification are those who would spend more hours of study time, perhaps to secure later scholastic performance. These future-oriented students are those who would stay in the library studying for a test while short-term oriented students are those who would succumb into temptation and will go out of the library to have fun with their friends without been well prepared for the next morning test.

Our results are consistent with Mischel's findings that individuals who delay longer are those who engage in attention control and self-instruction during a delay situation. As Mischel and his associates have found, individual who delay gratification are those who cognitively and behaviorally transform their tempting environment (e.g., the present of the cookies) into a manageable conditions. The present findings suggest

that in order to persist in goal-directed behavior the students studied longer while was fun to be doing something else, increasing in this way a tendency for future time perspective (Husman & Lens, 1999; Nuttin & Lens, 1985).

The present findings suggest that delay of gratification is associated with an array of motivational components and that it serves to mediate the effect of motivation on academic achievement. However, it is important to note that delay of gratification was not universally associated with all the motivational variables that the students have in their disposal. In this study, for example, delay was not related to test anxiety, performance approach goal orientation, and performance-avoid goal orientation. Further, delay of gratification was not related to the students' college grade point average. The later point deserves further elaboration. Delay of gratification, as assessed by the ADOGS is content and course specific, and thus, it examined students' tendencies to delay in a particular course where they are enrolled, rather than to all of their courses. That could be a possible reason why delay and grade point average were not related. The same argument is valid to all of the variables examined in the present study; all of them were course-specific. However, it is important to observe that in previous study, Bembenutty and Karabenick (1998) found a positive association between delay and course grade.

It is also important to comment about the negative association between self-efficacy and delay. As Table 2 shows, there is a positive, but not significant relationship between self-efficacy and delay ($r = .18$, $p > .05$). However, in the path model, that association changed to negative. Future research should examine these associations to

uncover the mechanism that is affecting the association between self-efficacy and delay of gratification.

Taking together, these results suggest that the learners who engage more time studying for their class re those who are highly efficacious, have a task-goal orientation, and are willing to delay gratification . These results show that academic delay of gratification mediates the relationship between motivation and academic-related outcomes and that this mediating role serves a function of a self-regulated learning strategy. As a self-regulatory strategy, delay of gratification is a useful for students to secure attainment of goal-directed behavior and intentions. This is particularly the case when the outcomes are temporarily distant and the students need to engage in future time perspective (Husman & Lens) and self-control.

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Table 1.
Means, Standard Deviation, and Cronbach Alpha of the Variables

	Mean	Standard Deviation	Cronbach Alpha
Academic delay of gratification[a]	2.93	0.71	0.72
Grate point average[b]	3.26	0.50	-
Hours of study	6.16	5.21	-
Test anxiety[c]	3.35	1.44	0.70
Task-goal orientation[c]	5.16	1.34	0.87
Performance-approach[c]	4.00	1.52	0.85
Performance-avoid[c]	2.64	1.26	0.81
Self-efficacy[c]	5.65	1.12	0.84

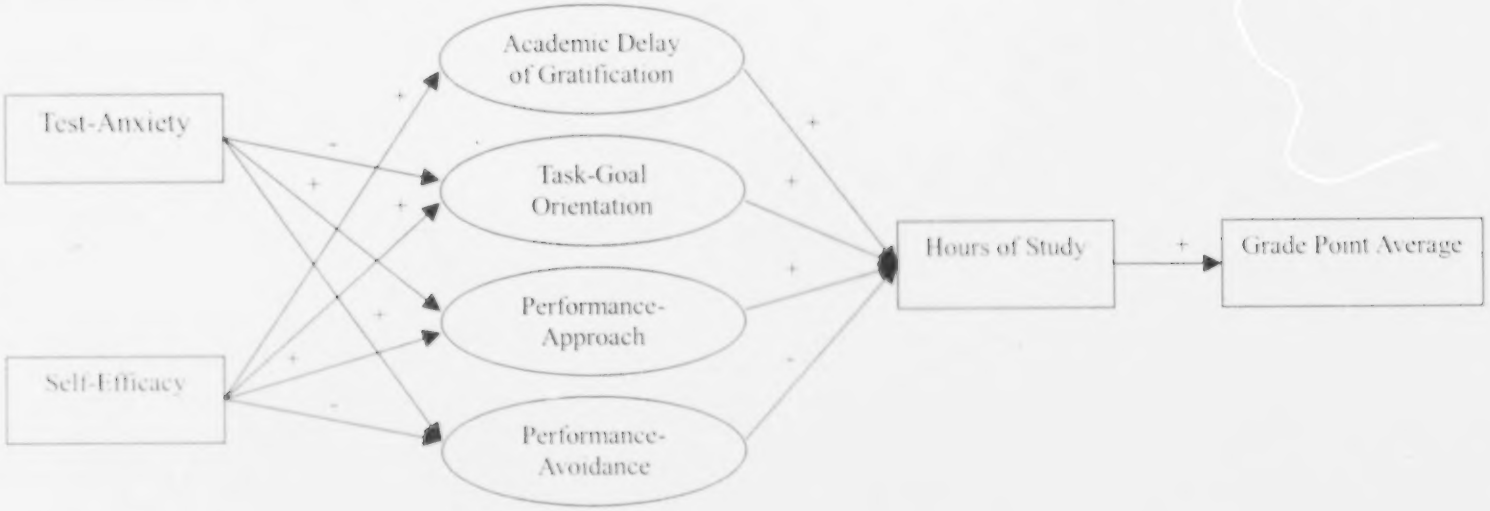
Note: [a] Values are based on a 1 ("Definitely choose A") to 4 ("Definitely choose B") cording responses, with higher values indicating greater preference for academic delay of gratification. [b] Values range from .00 to 4.00. [c] The response format consisted of a 7-point Likert scale (1 = "Not at all true of me" to 7 = "Very true of me").

Table 2.
Pearson Correlations among the Variables

	1	2	3	4	5	6	7
1. Academic delay of gratification							
2. Grate point average	.17						
3. Hours of study	.43	.03					
4. Test anxiety	-.02	-.05	-.07				
5. Task-goal orientation	.50	.02	.29	-.34			
6. Performance-approach	-.07	.17	-.11	.45	-.14		
7. Performance-avoid	-.15	.06	-.13	.48	-.34	.60	
8. Self-efficacy	.19	.17	.03	-.43	.61	.01	-.39

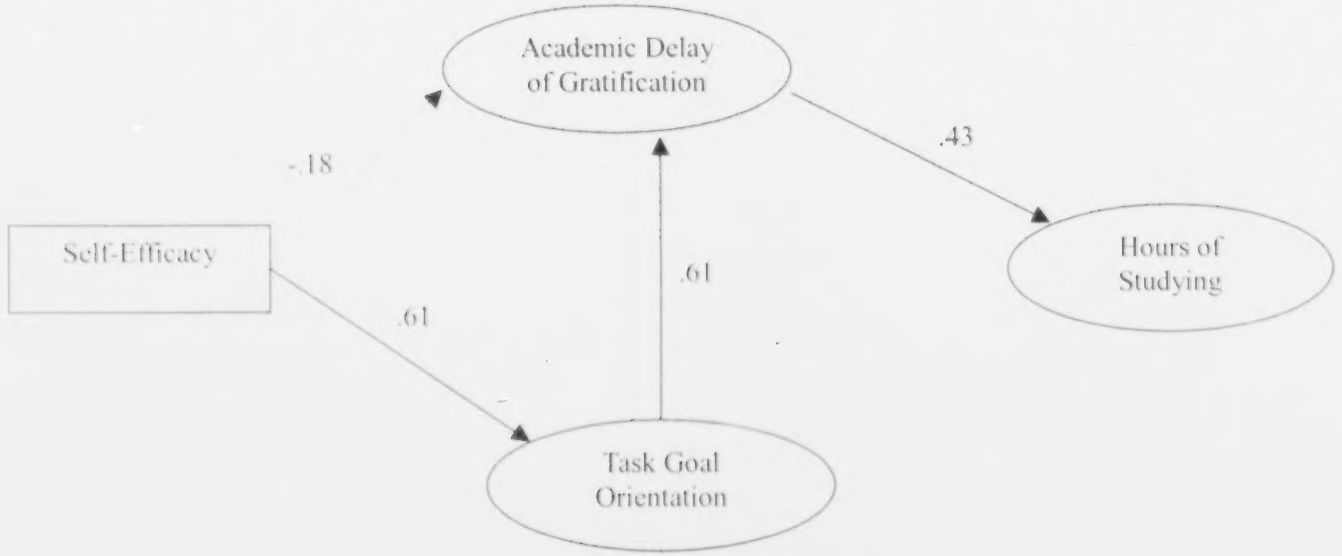
Note: Correlations greater than .21 are significant at $p < .05$ ($N = 102$).

Figure. 1
Representation of the Path Model



Note: A plus sign (+) indicates a predicted positive association between the variables. A negative sign (-) indicates a predicted negative association between the variables

Figure. 2
Final Path Model



Note: $\chi^2_{(2)} = 3.12$, $p = .209$. Incremental Fit Index (IFI) = .99. Non-Normed Fit Index (NNFI) = .96. All paths represent significant effects ($p < .05$), except the path between self-efficacy and academic delay of gratification.

APPENDIX A
Sample Items from the Academic Volitional Strategy Scales (ADOG)

SCENARIO 1

WHICH OF THE FOLLOWING WOULD YOU CHOOSE TO DO?

A. Delay studying for an exam in this class the next day even though it may mean getting a lower grade, in order to attend a concert, play, or sporting event, **or**

B. Stay home to study to increase your chances of getting a high grade on the exam.

Choose One[a]

Definitely choose A _Probably choose A _Probably choose B _Definitely choose B

SCENARIO 2

WHICH OF THE FOLLOWING WOULD YOU CHOOSE TO DO?

A. Leave the library to have fun with your friends and try to complete an assignment for this course that is due the next day when you get home later that night, **or**

B. Stay in the library to finish the assignment that is due the next day.

Choose One[a]

Definitely choose A _Probably choose A _Probably choose B _Definitely choose B

Note: [a] Values are based on a 1 ("Definitely choose A") to 4 ("Definitely choose B") coding responses, with higher values indicating greater preference for academic delay of gratification.

APPENDIX B

Sample Items from the Patterns of Adaptive Learning Survey, Test Anxiety, Self-Efficacy and Reliability Cronbach Alphas

GOAL ORIENTATIONS [a]

PATTERNS OF ADAPTIVE LEARNING SURVEY (PALS; MIDGLEY ET AL., 1997)

Task Goal Orientation (α = .87)

- An important reason why I do my work for the this class is because I like to learn new things.
- I do my work in this class because I am interested in it.

Performance-Approach Goal Orientation (α = .85)

- I want to do better than other students in this math class.
- I would feel successful if I did better than most of the other students in this math class.

Performance-Avoid Goal Orientation (α = .81)

- An important reason I do my math work for this class is so that I do not embarrass myself.
- It is very important to me that I do not look stupid in this math class.

TEST ANXIETY AND SELF-EFFICACY [a]

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE (MSLQ; PINTRICH ET AL., 1993)

Test Anxiety (α = .70)

- When I take tests in this class, I think a lot about how poorly I am doing.
- During tests in this class, I think about how other students are doing.

Self-Efficacy (α = .84)

- I am certain I can figure out how to do the most difficult work in this class.
- I am certain I can master the skills taught in this class.

Note: [a] The response format consisted of a 7-point Likert scale (1 = "Not at all true of me" to 7 = "Very true of me").

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